REMARKS

The rejections presented in the Office action dated March 9, 2004 have been considered. Claims 1-36 are pending in the application. Reconsideration and allowance of the application as amended is respectfully requested.

Claims 35-36 stand rejected under 35 U.S.C. §112, ¶1 as failing to comply with the written description requirement. The Applicant respectfully traverses the rejection, but has amended Claims 35-36 to address the rejection. More particularly, the rationale provided in the Office Action for the rejection concerns commencement and termination events that are independent of operational events. Claims 35-36 have been amended to replace the language "operational events" to events occurring within designated portions of the computing environment. For example, the "always on" start event (*e.g.*, FIG. 6, reference 606) can be used to provide an override commencement event such that the data collection is initiated upon initiating the "always on" 606 feature. This type of commencement event is not triggered by or otherwise dependent on events occurring in the functional modules or other designated portions of the computing environment, versus other commencement events that are triggered by events occurring within the computing environment such as the "start on F/A compare," "start on IP signal," etc. Another example relates to a termination event, which is the "no stop" 706 termination event. The Applicant respectfully contends that the Specification is described in such a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the invention as set forth in amended Claims 35-36. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 35-36 also stand rejected under 35 U.S.C. §112 based on the enablement requirement. It is believed that the amendments to Claims 35-36 more clearly establish that these claims are indeed enabled by the Specification as originally filed. Reconsideration and withdrawal of the rejection is respectfully requested.

The rejection to Claims 35-36 based on 35 U.S.C. §112, ¶2 is also addressed by the amendments to these claims. It is believed that the language in the currently pending claims is clear in that the data collection period is based on commencement and termination events that are independent of triggering activity from the functional modules or other portions of the

operating computing system. The Applicant respectfully requests reconsideration and withdrawal of the rejection.

Claims 1-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,978,902 to Mann (hereinafter *Mann*) in view of U.S. Patent No. 6,530,076 to Ryan et al. (hereinafter *Ryan*). The Applicant respectfully traverses the rejection, based on at least the amendments and remarks set forth below.

The Examiner has noted in paragraphs 3 and 5 that the language that the language "operational events" was being interpreted as commencement events and termination events. However, the embodiment of the invention set forth in Claim 1 is directed to data collection periods that are defined by particular events occurring within particular portions of the computing environment, such as within the various functional modules. These particular events can then serve as a start and/or stop event (*e.g.*, commencement and/or termination events). Thus, the operational event was directed to the actual event occurring in the computing environment, and commencement and termination events refer to those actual events occurring in the computing environment that will respectively initiate and terminate the data collection.

Claim 1 has been amended to rephrase the language relating to "operational events" that was raised by the Examiner. The feature relating to the controllable designation of at least one of a plurality of data collection periods now indicates that the at least one data collection period is defined by events occurring within designated portions of the computing environment, rather than an arbitrary initiation or termination signal such as in the cited portion of *Mann*. More particularly, column 22, lines 33-35 of *Mann* which was cited by the Examiner relates to breakpoint control registers that hold start and stop trace capture addresses. However, this does not describe defining a temporal data collection window that is defined by actual events occurring within the actual computing environment. For example, the page 25, lines 11-18 of the Specification recites:

> The history stack includes features that control the data capture, including starting and stopping the write mode operations. *The start features enable initiation of the collection of information* ***when certain events occur within designated portions of the system****, such as certain sections of the hardware. The stop features halt the collection of the data when the designated event*

> *occurs*. When used in connection with the various write modes of operation, this provides extensive controllability of what data will be collected, and when such collection begins and ends. (emphasis added)

Internal events of the computing system can be used to define the data collection period in which data is collected. Representative examples in the Specification indicate that events such as a current function, address, processor signal or other event naturally occurring within designated portions of the computing system can be used to define the data collection period, rather than an externally generated trace breakpoint as in *Mann* (see, *e.g.*, page 28, lines 1-4; page 28, lines 13-18).

More particularly, *Mann* is directed to a debug interface that uses a debug port (100) at a target system (101) to communicate with a host device (111). The host system is used to execute debug control software for transferring commands to the target system, and extracting and analyzing debug information generated by the target system (*e.g.*, col. 5, lines 1-4). *Mann* utilizes a test computer (*e.g.*, the host device 111) that is connected to the target device to debug the target device, where the host device sends commands including an information string to the operating system of the target device in order to extract information therefrom (*e.g.*, col. 3, lines 39-45). To perform debugging according to *Mann*, a conventional "trace" function is used. *Mann* discloses that trace gathering is performed during selected sections of program execution (*e.g.*, col. 22, lines 13-16). With respect to starting and stopping trace capture, *Mann* states at column 22, lines 27-34:

> Various known methods are contemplated for enabling and disabling trace capture. For example, x86 commands are supplied for enabling and disabling the trace capture function. Alternatively, an existing x86 command is utilized to toggle a bit in an I/O port location. Furthermore, on-chip breakpoint control registers (not shown) are configured to indicate the addresses at which trace capture is to start and stop.

As stated by the description in *Mann*, *Mann* utilizes known methods for enabling and disabling trace capture. Column 22, lines 33-35 was identified in the Office Action as teaching the controllable designation of at least one of a plurality of data collection periods defining temporal windows in which storage of the designated set of information is enabled. The cited portion of *Mann* indicates that on-chip breakpoint control registers are configured to

indicate the addresses at which trace capture is to start and stop. Thus, as is known in conventional software program trace capturing, traces are executed between particular program instructions.

The Applicant submits that *Mann* does not teach or suggest that events occurring within designated portions of the computing system can be used to define the data collection period in which data is collected. While *Ryan* was not cited in the Office Action as teaching such a feature, the Applicant submits that *Ryan* also fails to teach this feature. It is respectfully submitted that neither the trace breakpoints described in *Mann* nor the tracing system of *Ryan* teach or suggest, either alone or in combination, the controllable designation of data collection periods that are defined by events occurring within designated portions of the computing environment. The Applicant respectfully contends that a combination of *Mann* and *Ryan* fails to teach at least this recited feature of independent Claim 1, and thus Claim 1 is not rendered obvious by the combination of *Mann* and *Ryan*.

Claim 1 has been further amended to indicate that the controllable designation of a information storage mode involves controllably designating such an information storage mode that identifies the information from the logical segments that is to be stored, and also identifies one or more conditions occurring in the computing environment under which the designated set of information will be stored. More particularly, the original Specification recites at page 11, lines 6-9:

> The particular write mode selected corresponds to certain predetermined parameters, such as from which logic section(s) 102 information will be gathered and stored, *under what conditions will the information be gathered*, and the like. (emphasis added)

More particular examples of such write mode conditions are also set forth in the original Specification, which supports this amendment:

> One embodiment of the present invention *uses EP 428 events as a trigger for start and stop events*. Thus, while the actual error information may be collected by the EP and scanned to maintenance logic different from the history stack logic 414, *the EP 428 can serve as a trigger to begin gathering IL 420 information, CD 426 information, control logic 418 information, and so forth* depending on the particular write mode selected. Alternatively, *the EP 428 can serve as a trigger to stop gathering information upon the occurrence of such an error*, to preserve existing information recently collected in the history stack logic 414. In this manner, the state of the system may be stored in the history

stack logic 414 upon the occurrence of an internal error. (page 18, line 20 through page 19, line 4; emphasis added)

The "normal" mode is defined to direct the history stack to capture information, including address, function and control signal information, ***each time a request is received from a first predetermined logic section***. In one embodiment, this predetermined logic section is the Input Logic (IL) section described in connection with FIG. 4, and the data collected in this mode includes data from the IL 420, the CL 418 and the BC 424 and CB 426 sections of the bus interface logic 422. (page 22, lines 12-18; emphasis added)

The "cycle" mode is defined to direct the history stack to capture information, including address, function and control signal information, ***every predetermined clock cycle, if the data has changed***.... Further, the cycle mode captures the information ***on every predetermined clock cycle which in one embodiment is every "minor clock cycle"***. (page 22, line 20 through page 23, line 3; emphasis added)

The "function/address" mode is defined to direct the history stack to capture information, including address, function and control signal information, ***each time a request from a predetermined logic section is received and the current function and address match the predetermined function and address values***. (page 23, lines 13-17; emphasis added)

The "duplicate tag" mode is defined to direct the history stack to capture information, including address, function and control signal information, ***each time a trigger from the duplicate tag logic is received***. (page 24, lines 8-10; emphasis added)

These and other descriptions in the Specification represent examples of conditions occurring in the computing environment under which the designated set of information may be identified for storage.

The Office Action acknowledges that *Mann* fails to disclose controllably designating one of a plurality of information storage modes, wherein each of the information storage modes identifies a different set of information from the plurality of logical segments to be stored. *Ryan* is cited in the Office Action as teaching such a feature. Although the Applicant does not acquiesce that *Ryan* (or *Mann*) teaches such a feature, the Applicant contends that the amendments to Claim 1 now clearly distinguishes from *Ryan* as well as from *Mann*.

More particularly, column 6, line 66 through column 7, line 2 of *Ryan* is cited in the Office Action as teaching this claimed feature. However, Claim 1 recites that each of a

plurality of information storage modes identifies a different set of information from a plurality of logical segments in a computing system. Examples of such an arrangement are depicted, for example, in FIGs. 1 and 4 of the Applicant's patent application. *Ryan* does not teach this, but rather states that certain inputs from the processor 220 are selected to be traced. Thus *Ryan*, like *Mann*, relates to conventional instruction tracing, and *Ryan* does not teach sets of information from a plurality of logical segments in the computing environment. *Ryan* teaches only the tracing of the processor signals, and does not address identifying different sets of information provided from different logical segments within the computing environment. Similarly, column 9, lines 16-18, lines 63-65, and FIG. 9 of *Ryan* was recited in the Office Action as teaching the controllable designation of an information storage mode identifying a set of information. The recited portions of *Ryan* again refer to tracing functions associated with the processor signals, and therefore do not teach designating one of a plurality of information storage modes that each identify a different set of information from the plurality of logical segments to be stored.

As indicated above, Claim 1 has been amended to indicate that each of the information storage modes identify a condition(s) occurring in the computing environment under which the designated set of information will be stored. For example, each time a request is received from a particular functional module, at certain clock cycles, etc. *Ryan* does not describe the controllable designation of such information storage modes. The Applicant therefore submits that neither *Mann* nor *Ryan*, either alone or in combination, teach or suggest such controllable designation of an information storage mode(s) where such conditions arising from the computing environment itself are used in the designation of the information to be stored. Because the combination of *Mann* and *Ryan* does not teach or suggest at least this additional limitation, it is respectfully submitted that Claim 1 is in condition for allowance.

To establish *prima facie* obviousness, it must also be established that there is some suggestion or motivation to combine the reference teachings, and that there is a reasonable expectation of success. While the Applicant contends that Claim 1 is allowable over the combination of *Mann* and *Ryan* for failing to disclose all of the claim limitations, the Applicant respectfully contests the stated motivation to combine the reference teachings and maintains the position of the previous response. However, because it is believed that Claim 1

is allowable over the combination of *Mann* and *Ryan* for failing to disclose all the claim limitations, Claim 1 is in condition for allowance. The Applicant reserves the right to further argue the propriety of the motivation to combine such references if and/or when it is warranted, as the Applicant maintains the position that it is only with the benefit of hindsight that such references would be combined.

Dependent Claims 2-6, which are dependent from independent Claim 1, also stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Mann* in view of *Ryan*. While Applicant does not acquiesce with particular rejections to these dependent claims, it is believed that these rejections are now moot in view of the remarks made in connection with amended Claim 1. These dependent claims include all of the limitations of Claim 1 and any intervening claims, and recite additional features which further distinguish these claims from the cited references. "If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious." M.P.E.P. §2143.03; *citing In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Further, Claims 4 and 5 have been amended to more clearly indicate that the data commencement events and data termination events are triggered upon recognition of an event(s) occurring within the designated portions of the computing environment. Therefore, dependent Claims 2-6 are also allowable over the combination of *Mann* and *Ryan*.

Claims 7-18 and 23-34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Mann*, in view of *Ryan*, and in further view of U.S. Patent No. 6,145,123 to Torrey et al. (hereinafter *Torrey*). The Applicant respectfully traverses the rejection. Claims 7 and 8 are dependent from independent Claim 1. The Office Action identifies *Torrey* as teaching the subject matter of Claim 7, relying on *Mann* and *Ryan* as teaching the subject matter of Claim 1 from which Claim 7 depends, and Claim 8 was rejected based on the rationale for rejecting Claims 4, 5 and 7. It is respectfully submitted that *Torrey* does not teach or suggest the limitations of Claim 7 that are provided in its base claim (Claim 1), and as previously remarked, *Mann* and *Ryan* fail to teach or suggest the features provided in Claim 1 as currently pending. Therefore, a combination of *Mann*, *Ryan*, and *Torrey* fail to teach at least the features set forth in Claim 1, from which Claims 7 and 8 are dependent. It is further noted that Claim 8 has been amended to more clearly indicate that the data commencement events

and data termination events are triggered upon recognition of an event(s) occurring within the designated portions of the computing environment. Therefore, the combination of *Mann*, *Ryan*, and *Torrey* fail to teach or suggest all of the limitations of Claims 7 and 8, which are therefore allowable over the cited combination of references.

Independent Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Mann* in view of *Ryan* and in further view of *Torrey*. The rejection is based on the rejection of Claims 1, 4, 5, 7 and 8, and the Applicant respectfully traverses the rejection. Claim 9 has been amended to indicate that the write mode selection module enables storing selected subset of the operational information based on one or more conditions occurring in a functional module(s), and to indicate that the initiation and termination events occur within at least one of the functional modules. As commented above, it is respectfully submitted that a combination of *Mann* and *Ryan* fail to teach at least these claimed features. Further, *Torrey* fails to teach or suggest any write mode that is based on conditions occurring in the functional modules of the computing environment, or to teach that stop and/or stop events are derived from events occurring within a functional module(s). Because none of *Mann*, *Ryan* nor *Torrey* teach or suggest at least these recited features, a combination of *Mann*, *Ryan* and *Torrey* also fails to teach or suggest these features. It is respectfully submitted that Claim 9 is in condition for allowance. The Applicant also notes that Claim 9 includes recited features different from those of Claims 1, 4, 5, 7 and 8, and therefore reserves the right to argue other distinguishing features if and when appropriate.

Claims 10, 11, 12, 13 and 23 as originally filed were dependent on Claim 9, and have since been rewritten in independent form including all the limitations of Claim 9. Claims 10, 11, 12 and 13 have now been amended analogously to the amendments to Claim 9, and are also in condition for allowance.

Dependent Claims 14-18, which are dependent from independent Claim 9, were also rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of *Mann*, *Ryan* and *Torrey*. While Applicant does not acquiesce with the rejections to these dependent claims, it is believed that these rejections are now moot in view of the remarks made in connection with independent Claim 9. These dependent claims include all of the limitations of independent Claim 9 and any intervening claims, and recite additional features which further

distinguish these claims from the cited references. Therefore, dependent Claims 14-18 are also allowable over the combination of *Mann*, *Ryan* and *Torrey*. The Applicant reserves the right to argue any additional distinctions if the rejections are maintained.

Claim 23 as originally filed was dependent on Claim 9, and has since been rewritten in independent form including all the limitations of Claim 9. Claim 23 has now been amended analogously to the amendments to Claim 9, and is also in condition for allowance. Claim 24 is dependent from Claim 23 and also includes the limitations of Claim 9, and is also in condition for allowance.

Independent Claim 25 stands rejected as being unpatentable over *Mann* in view of *Ryan* and in further view of *Torrey*. The Applicant respectfully traverses the rejection. The rejection is based on the rejection of Claims 1, 4, 5, 7 and 8, and the Applicant respectfully traverses the rejection. Claim 25 has been amended to indicate that the information storage modes identify one or more conditions occurring in a functional module(s) under which the identified set of information will be stored, and to clarify that the commencement and termination events are events occurring within one or more of the functional modules. As previously remarked, it is respectfully submitted that a combination of *Mann*, *Ryan*, and *Torrey* do not teach or suggest at least these claimed features. It is respectfully submitted that Claim 25 is in condition for allowance.

Dependent Claims 26-29 and 31-34 are dependent from Claim 25 and include the limitations of Claim 25 and any intervening claims. While the Applicant does not acquiesce with the particular rejections to these claims, these rejections are moot in view of the amendments and remarks concerning Claim 25. Therefore dependent Claims 26-29 and 31-34 are also in condition for allowance, and withdrawal of the rejections to these claims is respectfully requested.

Claim 30 as originally filed was dependent on Claim 25, and has since been rewritten in independent form substantially including the limitations of Claim 25. Claim 30 has now been amended analogously to the amendments to Claim 25, and is also in condition for allowance.

While the Applicant contends that Claims 7-18 and 23-34 are allowable over the combination of *Mann*, *Ryan* and *Torrey* for failing to disclose all of the claim limitations, the

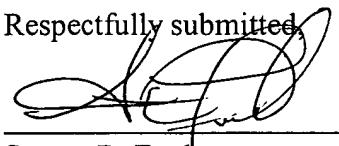
Applicant respectfully contests the stated motivation to combine the reference teachings and maintains the position of the previous response. However, because it is believed that these claims are allowable over the cited combination for failing to disclose all the claim limitations, it is believed that these claims are in condition for allowance. The Applicant reserves the right to further argue the propriety of the motivation to combine such references, and/or whether there is a reasonable likelihood of success, if and/or when it is warranted, as the Applicant maintains the position that it is only with the benefit of hindsight that such references would be combined.

The Applicant again notes the allowance of Claims 19-22, and thanks the Examiner for favorable consideration of these claims.

CONCLUSION

The Applicant respectfully submits that the pending claims are patentable over the cited prior art of record, and that the application is in condition for allowance. If the Examiner would find it helpful to discuss any issues related to this case, the undersigned attorney of record invites the Examiner to contact him at (651) 686-6633 (x110).

Respectfully submitted,



Date: September 9, 2004

Steven R. Funk
Reg. No. 37,830
Crawford Maunu PLLC
1270 Northland Drive, Suite 390
St. Paul, Minnesota 55120
(651) 686-6633